UT Southwestern Medical Center

Texas Senate Health & Human Services Committee

How data enhances COVID-19 forecasting

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UTSW COVID Projection Model – Impetus & Development

- Model impetus: need for accurate and regional information on how DFW metroplex/UTSW are impacted

- Foundational elements & how UTSW developed the DFW model

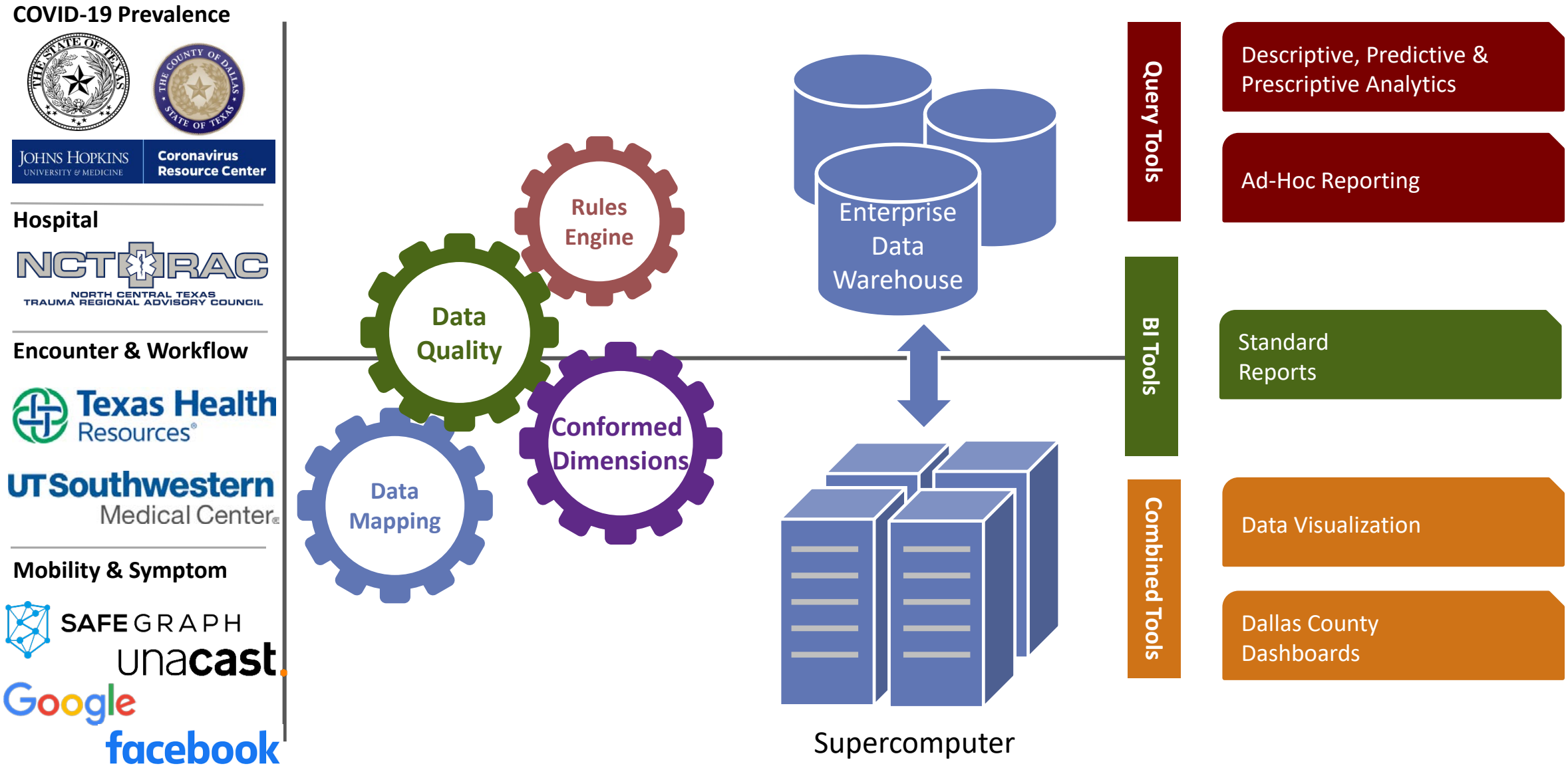
  - Multi-disciplinary team
    - Epidemiologists, Infectious Disease, Emergency Medicine, Bioinformaticists, Health System Information Resources, Data/Population scientists

  - Access to extensive range of data sources
    - Expertise to interpret

  - Research investment
    - Supercomputer and AI software – supported by State's investment in UTSW research infrastructure

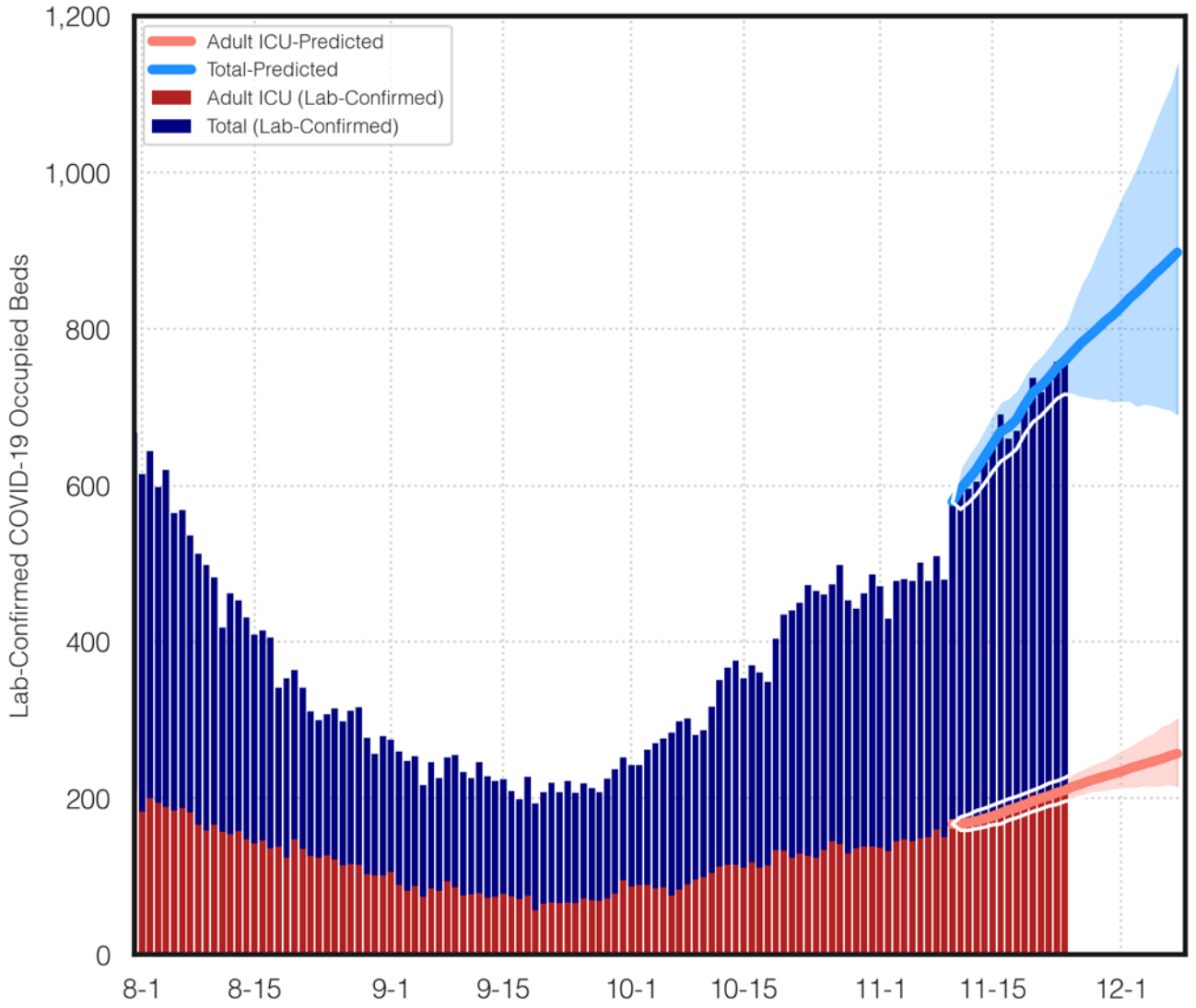
- Distinguishing Characteristics: adaptive and focused model only possible with significant computational time and extensive data knowledge

Model Data Architecture to Deliver Actionable Information



Hospitalization Capacity Forecast in Dallas County (example)

- Model forecasts focused on Tarrant & Dallas counties
  - Expect run rate of roughly 2.5K daily cases per day by December 8
  - Expect total cumulative infected cases between 150,000 and 180,000 in 2 weeks (90% confidence interval)
  - Dallas County hospitalizations should increase over the next two weeks (700-1,150) but could possibly decrease
  - NPI combined impact of 57% shows how adherent the population is to current policies. Greater adherence reduces infection rate

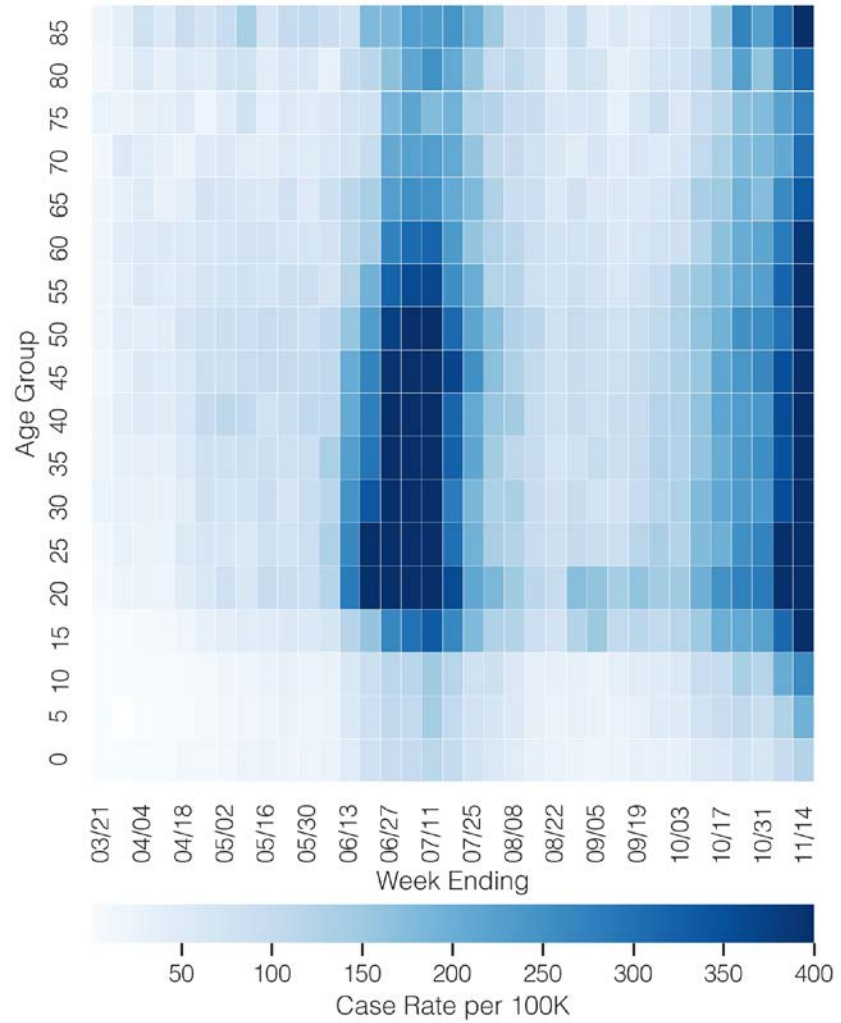


UPDATED NOVEMBER 24, 2020

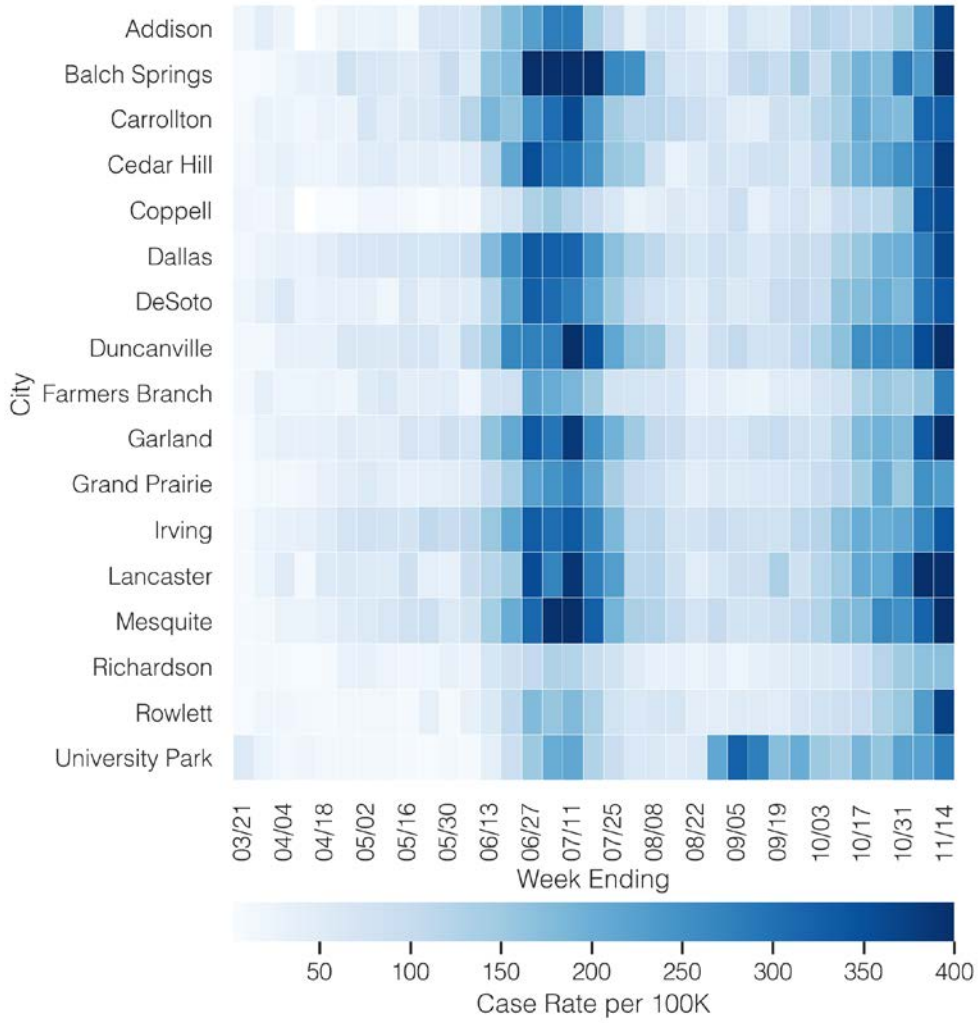
Source: NCTTRAC EMResource Master Data Set - County Level for data through 8/1-11/24

Hospitalization Capacity Forecast in Dallas County (example)

Dallas County Weekly Case Rate per 100K
By Age Bucket



Dallas County Weekly Case Rate per 100K
By City



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Source: Dallas County HHS, Accessed November 23; data for positive tests with a specimen collection date of 11/14 or earlier

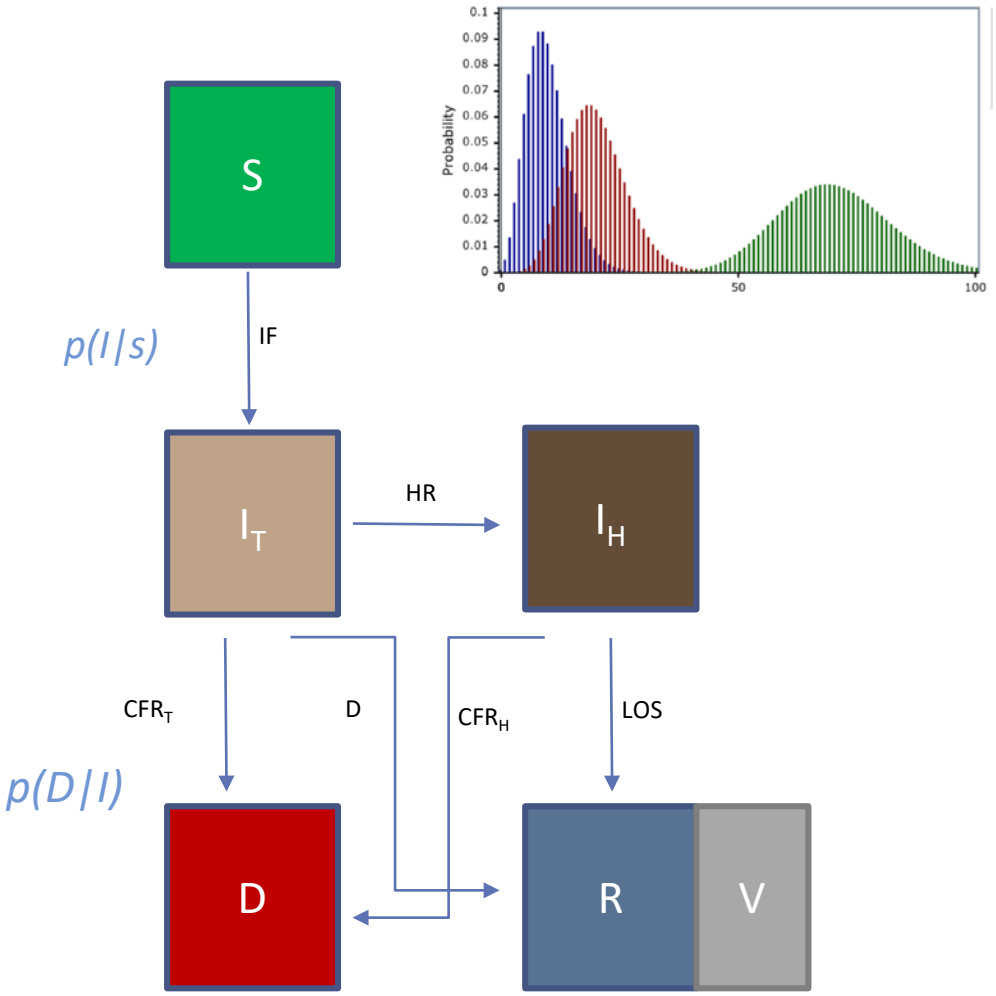
Model Projections – Applications & Use to Date

- Forecasts have proven highly accurate predicting number of cases and positivity rate within the margin of error (~5%)

- Used by UTSW and external entities to inform decisions on COVID response and recovery

- UTSW application – used to:
  - inform institutional operations decisions to close and resume in phases
  - guide intensity of screening process for patients, visitors and staff and to develop Occupational Health protocols for our workforce
  - assess transmission and community prevalence that can impact our health care and support workforce - internal infection rates
  - plan health care provider staffing

- External use – available to policy makers and businesses
  - model publicly posted since March to provide accessible data that DFW metroplex/counties, businesses, schools and communities can consult to help inform their decision-making for safe operations and reopening
  - UTSW has been available as a resource to anyone with questions regarding the model

Future directions to enhance power of models

- Regional/statewide models
  - model is replicable and scalable
- Hospitalization projections
  - Impact on health systems and cost
- Improved transition functions
- Data quality metrics collaboration
- Optimization of data pipelines